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ABSTRACT

For nearly 20 years, Utah's Office of Education has been systematically monitoring the academic performance and other characteristics of Utah's students. This executive summary, an overview of the sixth major report since 1967, examines several measures describing educational quality in Utah schools. The first section covers students' achievement in mathematics, reading and language arts, science, social studies, and art and music. In most areas, Utah test results are significantly higher than they were 10 years ago and substantially higher than national norms. Utah students are sill in need of improvement in advanced mathematics and the physical sciences. The second section focuses on student characteristics, including academic self-concept, peer relations, career development, and educational aspirations. A third section summarizes pertinent information about course-taking patterns in Utah schools and students' evaluations of their educational experience. A higher percentage of Utah high school students took at least two years of foreign language, mathematics, and science in 1985 than in 1984. Utah college-bound students rated their education more highly than did their national counterparts. The fourth section highlights implications for educational reform, and a fifth section identifies future areas of concern, such as preparing for the so-called information society and implementing effective schools research. (MLH)

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EXECUTIVE SUMMARY
Utah

EDUCATIONAL QUALITY INDICATORS

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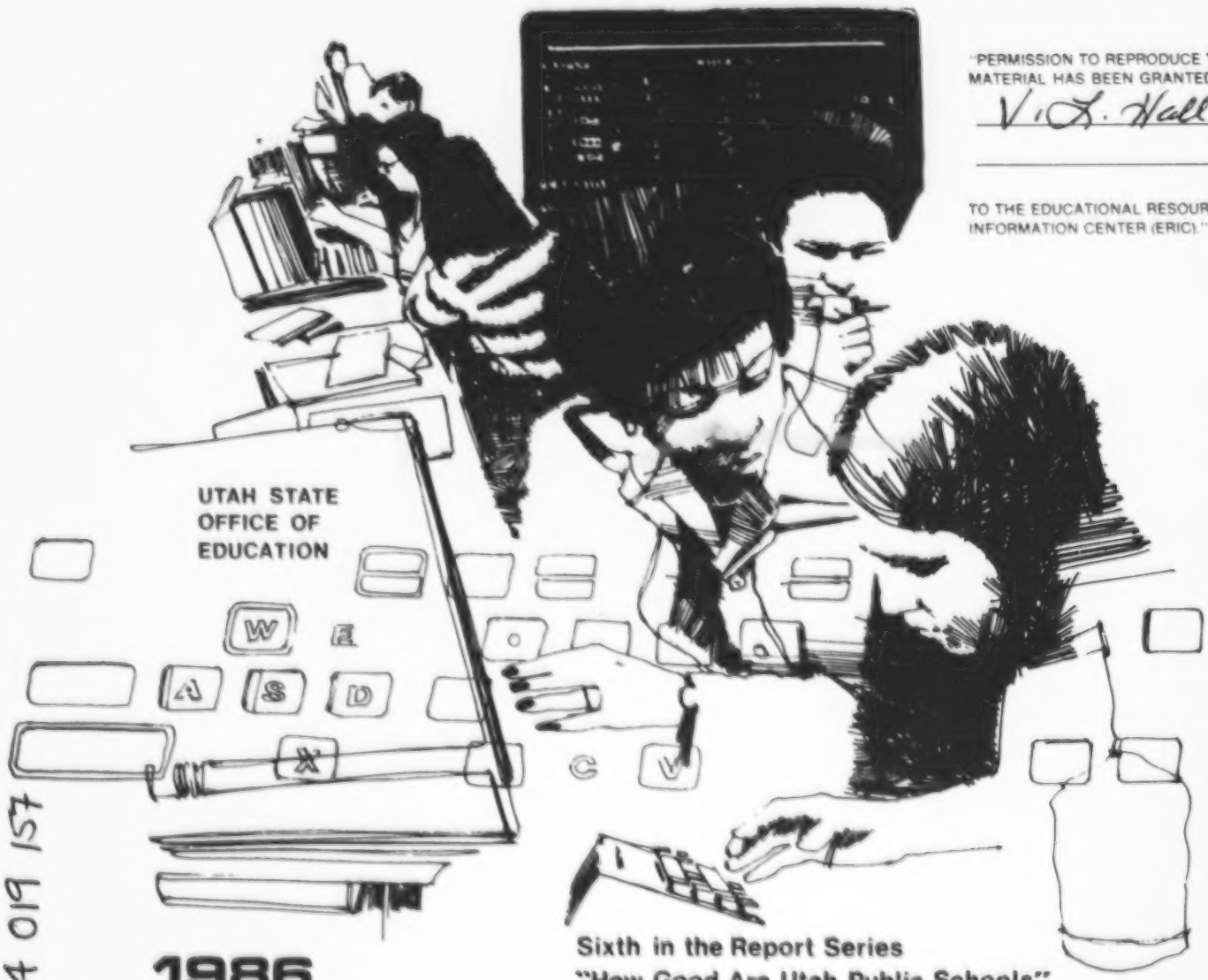

UTAH STATE OFFICE OF EDUCATION

1986

Sixth in the Report Series
"How Good Are Utah Public Schools"

EA 019 157

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EXECUTIVE SUMMARY

UTAH EDUCATIONAL QUALITY INDICATORS

The Sixth in the Report Series:
"How Good are Utah Public Schools"

UTAH STATE OFFICE OF EDUCATION

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January 1986

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For nearly twenty years, the State Office of Education has been systematically monitoring the academic performance and other characteristics of Utah students. This program began with the first report in this series, How Good Are Utah Public Schools, published in 1967. This executive summary is a brief overview of the sixth major report in that series. The purpose of Quality Indicators is to examine several kinds of measures which describe the quality of education in Utah's public schools. The focus of Quality Indicators is on the outcomes of education -- the knowledges, attitudes, and skills which students acquire. Quality Indicators reports the results of various testing programs and sources of information to provide a broad picture of student academic performance and other school-relevant characteristics.

In 1975, under the leadership of the State Board of Education and with a statement of legislative intent, Utah initiated a comprehensive program of statewide educational assessment. This program, which uses scientifically drawn, representative samples of schools and students, gauges the performance of nearly 8,000 Utah fifth and eleventh graders in approximately 100 schools every three years. Statewide Assessment encompasses a wide variety of both academic and non-academic measures of student performance. A summary of Statewide Assessment findings is included in the present edition of Quality Indicators.

These two compatible, but methodologically different, approaches to examining the performance of Utah students together yield an important perspective on the performance of Utah's elementary and secondary schools. This perspective includes the traditional academic areas and other important areas of educational focus such as student academic self-concept, attitude toward school, the arts, and other areas which are not measured by traditional, basic skills-focused assessment programs.

The emphasis in the Quality Indicators series is on the examination of trends in the way Utah students score on the many measures reported in this volume. Certainly no one source of information reported here is by itself an adequate index of the total performance of Utah's public educational system. Taken together, however, the results reported provide a rather comprehensive picture of how the performance of Utah students today compares with that of the past, as well as how present levels of performance in the state compare with those nationally.

This executive summary presents an overview of findings from the total report. The focus of this summary will be on examining several major areas of performance and relating appropriate sources of information to these major areas. This summary has five major sections. The first section is Academic Achievement which covers mathematics, reading/language arts, science, social studies, and art and music achievement. The second major section is Student Characteristics which deals with information in areas such as academic self-concept, peer relations, and career development. A third section summarizes pertinent information about Patterns of Course Taking in Utah schools as well as students' evaluations of their educational experience. A fourth section highlights implications for Educational Reform, and a final section will endeavor to identify implications for education in the 1980's and beyond.

Academic Achievement

Mathematics. As is true with most of the traditional, academic areas which will be reviewed here, distinct differences have been noted in both state and national results in mathematics based on the level of skills being assessed. Utah's Statewide Educational Assessment results have shown a

distinctly positive picture at both grade five and grade eleven in describing the basic skills achievement of Utah students. Mathematics performance of both fifth and eleventh graders on the Comprehensive Tests of Basic Skills was significantly higher in 1984 than it was ten years earlier and substantially above national norms. Results from a variety of programs including State Assessment, National Assessment, and the ACT, suggest that students in Utah, as well as students nationally, do not demonstrate the same level of competence in intermediate and higher-level math skills (such as algebra and geometry) which is evident in the fundamental areas of mathematics. Another troublesome finding is the fact that Utah males continue to score at much higher levels than females on the ACT mathematics test. Recent analyses of course-taking of Utah senior high students have found significantly lower percentages of Utah's young women electing into courses such as second-year algebra and plane geometry. While this does appear to be changing slowly, there is still significant room for improvement.

To review, the performance picture in mathematics is rather positive when considering basic mathematics skills of both elementary and secondary students as well as the state's most gifted students. These groups perform consistently better than national comparison groups in programs such as the State Assessment and the Advanced Placement examinations. Conversely, there is considerable evidence that intermediate and higher level mathematics skills are not being acquired to a sufficient degree by typical secondary students in Utah and across the nation. This problem continues to demand serious attention from educators and the public.

Reading/Language Arts. The 1984 Statewide Assessment revealed that scores of Utah fifth and eleventh grade students were much higher than those of the national norm group on the Comprehensive Tests of Basic Skills in

reading. This held true for both vocabulary and reading comprehension. A rather disconcerting finding was a decline between 1981 and 1984 in the performance of Utah eleventh graders on this test.

The national picture, as documented by evidence from the National Assessment of Educational Progress, suggests that students across the nation have mastered the basics in reading to a very significant degree. Concern again emerges in examining higher-level skills in reading. The most recent National Assessment of reading showed that 40% of thirteen-year-olds and 16% of seventeen-year-olds did not have intermediate reading skills and strategies, and fewer than 5% of the seventeen-year-olds had acquired advanced reading skills and strategies.

In the content area of English usage, 1984 results from the Statewide Educational Assessment show Utah fifth and eleventh graders performing at much higher levels than national norm groups on the Comprehensive Tests of Basic Skills language usage test. State and national ACT results in English have taken a rather marked upswing beginning with 1984. Utah's average ACT English score in 1984 was, in fact, the highest average obtained by Utah students on this test during a sixteen-year period beginning in 1970.

Results from the Advanced Placement program in English show consistent increases in Utah performance over a twenty-year period. During this same time the scores of national AP English test-takers have remained very stable, but typically at a slightly higher level than that of the Utah group of test-takers.

While writing, as such, has not been directly assessed as part of any statewide study in Utah, the results from national studies, such as the National Assessment of Educational Progress, would indicate that a serious look should be taken at the need to enhance writing instruction. Greater

focus would appear to be needed on the structural elements of writing, and students need many more opportunities to produce compositions and receive informed criticism of their work.

The total picture in reading and the other language arts suggests strongly that Utah elementary and secondary students perform very well in the basic skills. Very high percentages of Utah adults can deal with the everyday reading skills necessary to function in society. Considerable national evidence suggests that more emphasis should be placed on helping students acquire advanced skills in both reading comprehension and the use of the English language with particular emphasis on structure and composition.

Science. Evidence from virtually every source reviewed in this report suggests that Utah students perform rather well in the various areas of science. The first Statewide Assessment showed that Utah fifth and eleventh grade students scored at dramatically higher levels than national norm groups on the science test of the Comprehensive Tests of Basic Skills. This same level of superiority is reflected in the performance of Utah high school students on the ACT science test, where the Utah students tested out-performed the national comparison group over nearly twenty years.

The national picture, as documented by the National Assessment of Educational Progress (NAEP), is not as bright. The most recent National Assessment showed that only among NAEP's nine-year-olds were statistically significant gains reported between 1977 and 1982. Thirteen-year-olds showed no significant changes in science performance during these same assessments and national seventeen-year-olds actually did less well in 1982 than four years previous. National Assessment findings suggest that physical rather than biological sciences are the source of weakness in the national test results.

Utah's academically gifted students have shown a very significant trend of growth in their Advanced Placement scores in biology over a twenty-year period. On the AP chemistry test, Utah students have performed at levels essentially equal to the national comparison group over the last several years.

Overall, science continues to be an area of real strength for Utah students at both the elementary and secondary levels. Efforts should be made to sustain and build on this record and to continue to attract and keep the best available science teachers.

Social Studies. Through 1983, there was great similarity in the performance of Utah high school students and the national sample on the American College Testing program social studies test. In 1984, there was a marked departure from this similarity with Utah students scoring half a standard scale point higher than the previous year, and almost half a point higher than the national comparison group.

National Assessment has measured knowledge, skills, and attitudes in social studies twice. These studies demonstrated very little change in the overall performance of the nation's nine-year-olds with slight declines at the thirteen-year-old level and larger declines for seventeen-year-olds. These results were observed in the mid 1970's.

The American History test in the Advanced Placement program shows a substantial increase in the performance of Utah's academically gifted students since 1966. These most recent AP American History results show a slightly higher percentage of Utah students qualifying than is the case for the more select national group on this test.

Art and Music Achievement. Results from the first three assessments of music achievement in the Statewide Educational Assessment program showed

consistent growth for Utah fifth graders between 1975 and 1981. The scores of Utah eleventh graders were also higher in each of the first three assessments. Positive changes were also noted at both grade levels for art achievement between 1978 and 1981. The most recent Statewide Assessment in 1984, however, using a small sampling of art and music achievement items, showed performance decreases in both art and music achievement at both grade levels. This most recent trend, as well as the absolute levels of performance in both art and music, clearly indicate a need for improvement in these areas. Much the same finding is documented by National Assessment results in art and music, which were not as positive as the Utah profile.

Student Characteristics

This section will feature a summary of findings dealing with certain critical student characteristics other than the academic achievement areas which have just been summarized.

Academic Self-Concept. The Utah Statewide Assessment program has gauged the level of student academic self-concept in all four assessments between 1975 and 1984. For the most recent assessment, student scores for academic self-concept improved significantly at grades five and eleven reaching ten-year highs. Students with high scores on academic self-concept tend to have high scores on other educational outcome measures. Student self-concept was apparently bolstered by teaching practices such as reinforcement of self-concept.

Peer Relations. The profile of results on the peer relations measure from the Statewide Assessment program shows consistent growth over a ten-year period for Utah fifth graders with a ten-year high reached in 1984. Eleventh grade scores stayed essentially the same in 1984 as 1981. Students with high

scores on the peer relations measure tended to have higher scores on many other areas as well.

Career Development and Career Awareness. The Statewide Assessment program measures several different aspects of student career development and awareness. These include scales measuring career development experience, career awareness and exploration, as well as independent development. The career development experience scale measures the participation of Utah eleventh graders in school-based career education activities. This measure shows very little change over a ten-year period for Utah eleventh graders. The fact that about one-third of the students tested reported no exposure to career development experience is a definite cause for concern.

Results from the career awareness and exploration scale, which focuses on the extent to which students have considered personal career plans and activities, show a positive trend from 1975 through 1981, but a moderate decline in 1984. Clearly, there is still considerable room for greater implementation of such career education thrusts as student use of career resource centers, work observation, career-focused parent involvement, and student educational planning.

Educational Aspirations. The pattern of education degree aspirations of Utah college-bound students is somewhat different than the national ACT sample. Utah students tend to be somewhat more interested in pursuing vocational or technical programs than the national sample and less interested in a terminal Bachelor's degree program. The latter is coupled with considerably more interest on the part of Utah students in obtaining graduate level degrees than is observed nationally.

Patterns of Course Taking and Student Evaluations of Their Educational Experience

In a recent modification of the annual survey of Intentions and Accomplishments of Utah High School Seniors, the State Office of Education has developed the capability of tracking student-reported experiences in selection of courses. Results are now available for both 1984 and 1985 and, in general, show at least moderate increases in the percentage of students taking at least two years of foreign language, mathematics, and science. Increases were also noted in these same areas for the percentage of students taking at least three years of these subjects. An analysis of the specific courses taken by these same groups of seniors shows substantially higher percentages of Utah students taking the intermediate and higher level courses in the math sequence including algebra I and II, geometry, trigonometry and calculus. Higher percentages of Utah seniors were also noted in specific science classes including physics and chemistry, as well as computer science. Yet another area where definite positive trends have been noted is in the honors and Advanced Placement courses where higher percentages of seniors in 1985 than 1984 reported taking classes in areas such as history, English, mathematics, biology, and chemistry.

Student Attitude Toward School and Evaluations of Schooling. Results from the Statewide Assessment program over all four assessments show increasing levels of student enjoyment of school at both grade five and grade eleven.

The Utah 1985 ACT college-bound sample of students evaluated the overall adequacy of their high school education in a considerably more positive fashion than did the national ACT sample. A higher percentage of Utah students rated their high school experience as either "excellent" or "good"

than did the national group. This observation was true across secondary preparation areas including business, vocational, college preparation, or students in a general curriculum.

Implications For Educational Reform

While the impact of much of what has been put into place under the umbrella of educational reform must be assessed over a much longer period of time and with more targeted evaluation strategies than the system-wide emphasis which is provided here, there are some important observations which do stem from the information in Quality Indicators.

First, the rather pronounced increases in the performance of Utah high school students on the ACT achievement tests is an important finding. It is highly probable that these performance increases are linked to more rigorous requirements for graduation which have been established at both the state and local levels in Utah, as well as to the higher college entrance admission standards which have been put in place by several colleges and universities in the state. Thus, these higher expectations do appear to be translated into performance increases at both the state and national levels.

Second, a related finding is that Utah high school students are enrolling in greater numbers, than was true previously, in subjects such as intermediate and higher level mathematics, science, and foreign language. There would again appear to be direct linkages between this finding and the higher expectations which have been set for students in the form of new graduation requirements and college admissions standards.

Third, the dramatic increase in the number of Utah students participating in the Advanced Placement program as well as the very substantial performance of the Utah students engaging in this effort is a significant finding. Literally thousands of Utah students are now earning college credit for

courses taken in high school and at the same time receiving extremely high quality instruction as a direct result of the Advanced Placement program. This is an example of the finest expression of educational productivity which spans the public and higher education sectors.

As indicated above, many of the aspects of educational reform must be examined in a much more targeted fashion than is possible here. In the next several years the impact of programs such as Utah's career ladder effort, additional efforts at curriculum reform, with the full scale implementation of the K-12 core curriculum, and efforts such as more emphasis on student educational planning all have the potential for influencing many of the performance indicators which are reviewed in the Quality Indicators series. Thus, some aspects of the reform movement have already made measurable differences in the performance of Utah students, while others will, by their very nature have to be in place and fully operational for a period of time before they can reasonably expect to impact the performance of students on measures like those reviewed here.

Implications For Education in the 1980's and Beyond

Preparing for the "Information Society." Recently the Education Commission of the States addressed the matter of how well the schools of the nation are preparing students for the so-called "information society." Certainly the decades of the 1980's and 1990's will be characterized by an increasing focus on information and information technology. A key issue is whether or not our present educational delivery system is responsive to changes currently impacting it and how will it accommodate to the pressures of tomorrow. The Education Commission of the States summarized its examination of these matters with the following statement:

The United States has entered the age of rapid information transmission. Breakthroughs in electronics and communication technology are responsible for this transformation and permit unprecedented industrial restructuring. Structural changes in the labor force characterize an expanding economy, however, and need not threaten economic stability. Thus, by examining the skills needed in tomorrow's labor force, we can better prepare workers for the changing conditions they will encounter.

Other factors significantly related to economic growth are advances in new knowledge and increased education levels of the work force. Occupational growth throughout the 1980's is projected to expand most rapidly in the higher skilled technical occupations. Tomorrow's workers will likely need improved skills in the selection and communication of information. Many of today's skills considered to be of a "higher" level are the potential basic skills of tomorrow. Attention given only to the minimum competencies, as currently defined, shows a lack of foresight and leaves many students without adequate preparation for future learning and employability. The National Assessment of Educational Progress (NAEP) surveys the knowledge, skills, and attitudes of the nation's seventeen-year-old students. Survey results indicate that today's minimum skills are demonstrated successfully by a majority of students. Higher-order skills, however, are achieved only by a minority of seventeen-year-olds, and this proportion declined over the past decade. If this trend continues, as many as two million students may graduate in 1990 without the skills necessary for employment in tomorrow's market place. Many efforts are already underway to promote higher standards of educational achievement. Future actions must include long-range planning in the following areas:

- An increased awareness of the contribution of human resources to economic productivity.
- An understanding of the diverse needs of tomorrow's students and of workers displaced by technological changes.
- Improved education/industry partnerships to maintain relevant goals in education.
- Re-evaluation processes of essential employment skills.
- Improved curricula that incorporate future requirements and instruction in higher order skills.

The above stated observations on national implications have equal relevance for the state of Utah. In fact, several of these observations are central in the Utah reform effort.

The long-term decline in ACT college entrance scores, which characterized both national and state performance during the decade of the 1970's, suggested the need for programs which stressed appropriate preparation for each student and renewed emphasis on intermediate and higher-level skills for college-bound students. The answer would seem not to be unrealistically high standards imposed on all students regardless of their capabilities or educational intentions. What is called for is the intelligent tailoring of programs for students based on their needs. A more rigorous program, including higher standards, would seem to offer the greatest postsecondary opportunities for students who are not certain of their post-high school direction. Utah's new graduation requirements strongly reflect this emphasis.

The advent of an information society carries with it the strong need for the preparation of a large segment of the work force skilled in mathematics, science, and technology. An Education Commission of the States report cites the work of the National Science Board's Commission on Pre-College Education in defining three major tasks that the educational system must address in these areas:

1. Generate a sufficiently large pool of well-prepared and motivated students to pursue professional careers in science and engineering;

2. Provide a range of high quality educational opportunities that are sufficiently broad and flexible to prepare a wide spectrum of students for careers in technically-oriented occupations and professions; and

3. Raise the general science and technology literacy level of all students to prepare them better to live in the society of today and tomorrow, regardless of what careers they elect to pursue (National Science Board, 1982).

Implementation of the Research on Effective Schools. A growing body of research information exists which provides the basis for improving elementary and secondary education and is based on school effectiveness research over the past several years. Michael Cohen (1982) of the National Institute of Education offers the following synopsis of this body of information:

> This large collection of research findings holds great promise for the improvement of the nation's schools. If state and local leaders are willing to examine the concepts, theories, and frameworks inherent in the research, then to apply them -- carefully tailored to fit state and local circumstances -- schools will surely be on the road to becoming more effective. The research does not promise "overnight cures"; it only offers some grounds for optimism.

Utah has initiated a number of efforts which are congruent with the research on effective schools. The entire effort in implementing an objectives-based core curriculum is very much in harmony with the findings of the effective schools research. The State Office of Education has also prepared an extensive report entitled, "Research Resources Dealing With the Effective Schools Literature - Classroom Processes." This compendium presents an analysis of eleven classroom processes which have proven to be effective in enhancing academic achievement. It also identifies resources and techniques which would be useful to teachers in implementing such processes. The areas identified in the study are the following:

- Academic Expectations
- Academic Learning Time
- Classroom Management
- Curricular Congruence
- Direct Teaching/Instruction
- Monitoring of Student Progress and Evaluative Feedback
- Homework
- Parents Academic Involvement With Their Own Children
- Reinforcement of Self-Concept
- Rewards for Achievement
- Teacher Questioning Practices

Higher implementation of the processes identified in this research and listed above holds great potential for improvement of the academic performance of Utah students.

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